

Green Monopropellant Propulsion for Small Spacecrafts, Phase II

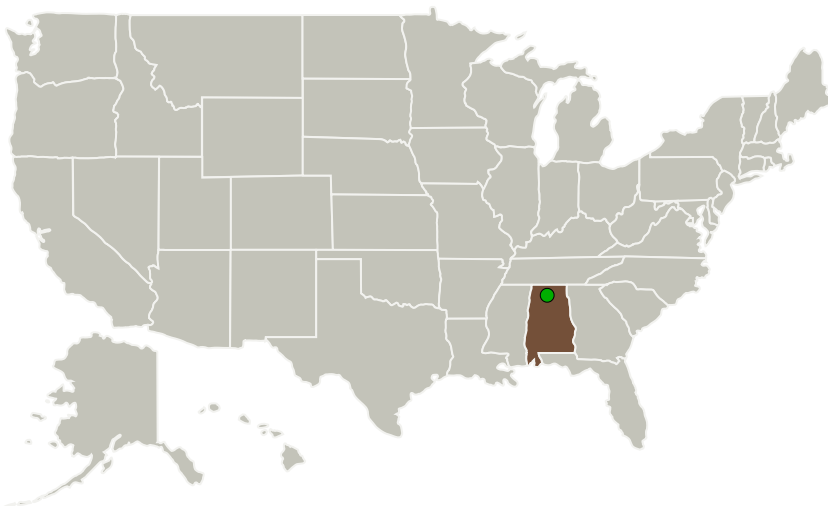
Completed Technology Project (2017 - 2021)



Project Introduction

One of the biggest obstacles preventing the widespread implementation of small satellites is the process of actually getting them into space. Current methods include hitching rides as secondary payloads. Although this initiative has provided significant new launch capacity for CubeSat-class spacecraft, it is not without issues, most specifically limited orbits and orbital lifetime. Many missions need higher orbits to perform their missions; and lower orbits are subject to atmospheric drag that may cause premature reentry. Safe and affordable miniaturized propulsion can overcome these limiting factors and is a high-visibility capability sought by the CubeSat community. Even basic capabilities to push in one direction will allow nanosats to remain in orbit longer, or allow a satellite placed into low-Earth orbit to propel itself to a higher or more circular orbit. In Phase I, Plasma Processes designed, fabricated and delivered to NASA a miniaturized propulsion system compatible with non-toxic HAN- and ADN-based green monopropellants for small spacecraft propulsion. In Phase II, the green propellant thrusters will be tested with both monopropellants for pressure fed and pump fed 1U propulsion modules. The use of advanced, non-toxic propellants will increase mission capabilities including longer mission durations, additional maneuverability, increased scientific payload space, and simplified launch processing. Adding propulsion will also enable de-orbiting of the satellite after completion of the mission.

Primary U.S. Work Locations and Key Partners



Green Monopropellant Propulsion for Small Spacecrafts, Phase II Briefing Chart Image

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations

Alabama

Images



Briefing Chart Image

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Briefing Chart Image
(<https://techport.nasa.gov/image/133459>)

Project Management

Program Director:

Jason L Kessler

Program Manager:

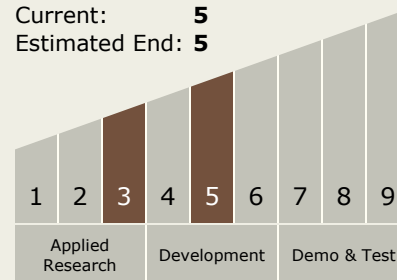
Carlos Torrez

Principal Investigator:

Anatoliy Shchetkovskiy

Technology Maturity (TRL)

Start: 3
Current: 5
Estimated End: 5



Technology Areas

Primary:

- TX01 Propulsion Systems
 - TX01.1 Chemical Space Propulsion
 - TX01.1.2 Earth Storable

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System